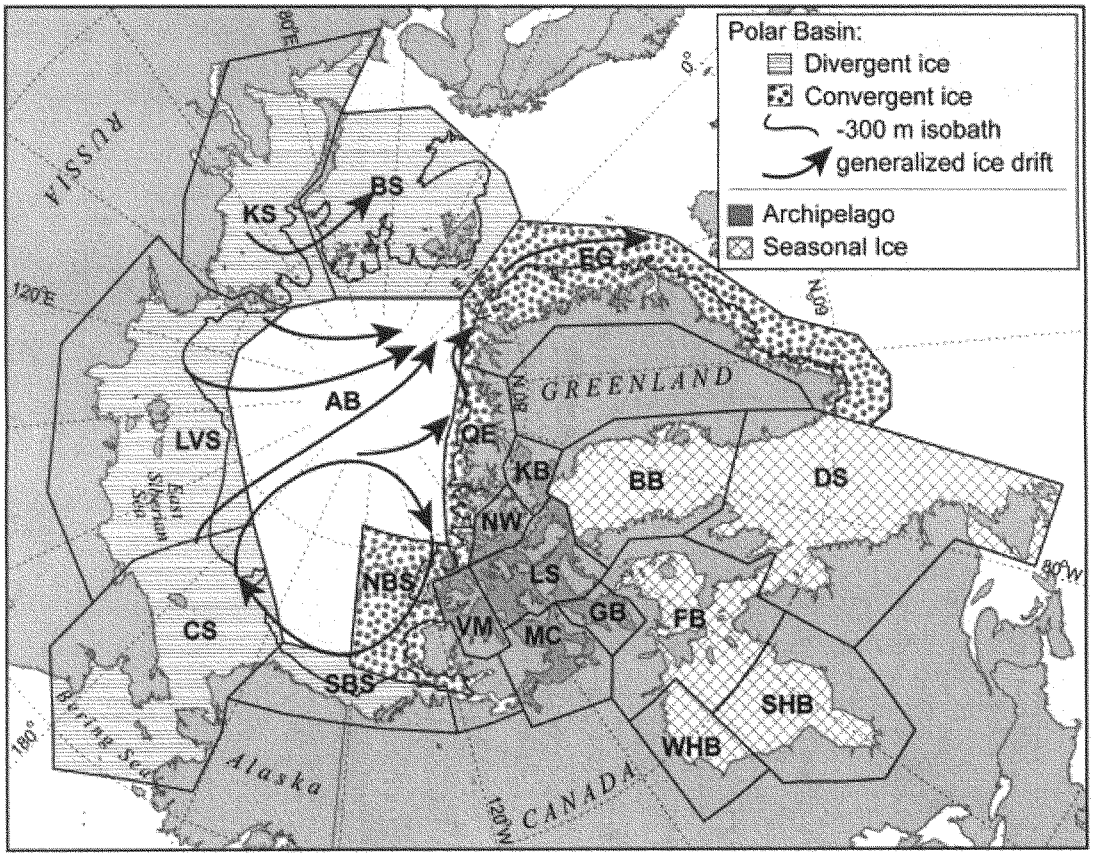

Figure 2. Map of four polar bear ecoregions in Amstrup et al. (2007)(used with permission).

The *Archipelago Ecoregion,* islands and channels of the Canadian Arctic, has approximately 5,000 polar bears representing 6 populations recognized by the IUCN (Aars et al. 2006, p. 34–35). These populations are Kane Basin, Norwegian Bay, Viscount Melville Sound, Lancaster Sound, M'Clintock Channel, and the Gulf of Boothia. Much of this region is characterized by heavy annual and multi-year ice that fills the inter-island channels year round and polar bears remain on the sea ice throughout the year.

The polar basin was split into a *Convergent Ecoregion* and a *Divergent Ecoregion,* based upon the different patterns of sea ice formation, loss (via melt and transport) (Rigor et al. 2002, p. 2,658; Rigor and Wallace 2004, p. 4; Maslanik et al. 2007, pp. 1–3; Meier et al. 2007, pp. 428–434; Ogi and Wallace 2007, pp. 2–3).

The *Divergent Ecoregion* is characterized by extensive formation of annual sea ice that is transported toward the Canadian Arctic islands and Greenland, or out of the polar basin through Fram Strait. The Divergent ecoregion includes the Southern Beaufort, Chukchi, Laptev, Kara, and Barents Seas populations, and is thought to contain up to 9,500 polar bears. In the Divergent Ecoregion, as in the Archipelago Ecoregion, polar bears mainly stay on the sea ice year-round.

The *Convergent Ecoregion,* composed of the Northern Beaufort Sea, Queen Elizabeth Islands (see below), and East Greenland populations, is thought to contain approximately 2,200 polar bears. Amstrup et al. (2007, p. 7) modified the IUCN-recognized population boundaries (Aars et al. 2006, pp. 33,36) of this ecoregion by redefining a Queen Elizabeth Islands population and extending the original boundary of that population to include northwestern Greenland (see Figure 2). The area contained within this boundary is characterized by heavy multi-year ice, except for a recurring lead system that runs along the Queen Elizabeth Islands from the northeastern Beaufort Sea to northern Greenland (Stirling 1980, pp. 307–308). The area may contain over 200 polar bears and some bears from other regions have been recorded moving through the area (Durner and Amstrup 1995, p. 339; Lunn et al. 1995, pp. 12–13). The Northern Beaufort Sea and Queen Elizabeth Islands populations occur in a region of the polar basin that accumulates ice (hence, the Convergent Ecoregion) as it is moved from the polar basin Divergent Ecoregion, while the East Greenland population occurs in area where ice is transported out of the polar basin through the Fram Strait (Comiso 2002, pp. 17–18; Rigor and Wallace 2004, p. 3; Belchansky et al. 2005, pp. 1–2; Holland et al. 2006, pp. 1–5; Durner et al. 2007, p. 3; Ogi and Wallace 2007, p. 2; Serreze et al. 2007, pp. 1,533–1536).

Amstrup et al. (2007) do not incorporate the central Arctic Basin population into an ecoregion. This population was defined by the IUCN in 2001 (Lunn et al. 2002, p.29) to recognize polar bears that may reside outside the territorial jurisdictions of the polar nations. The Arctic Basin region is characterized by very deep water, which is known to be unproductive (Pomeroy 1997, pp. 6–7). Available data indicate that polar bears prefer sea ice over shallow water (less then 300 m (984 ft) deep) (Amstrup et